



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

SCIENCE

FRIDAY, MAY 13, 1910

CONTENTS

| | |
|---|-----|
| <i>The American Association for the Advancement of Science:—</i> | |
| <i>The Work of the Higher Education Association: DR. CLARENCE F. BIRDSEYE</i> | 721 |
| <i>What Specialization has done for Physics Teaching: PROFESSOR JOHN F. WOODHULL</i> | 729 |
| <i>Four Instruments of Confusion in Teaching Physics: DR. H. L. TERBY</i> | 731 |
| <i>The Resignation of President Needham</i> | 734 |
| <i>Scientific Notes and News</i> | 735 |
| <i>University and Educational News</i> | 738 |
| <i>Discussion and Correspondence:—</i> | |
| <i>The Study of Rocks without the Use of the Microscope: PROFESSOR AUSTIN F. ROGERS</i> | 739 |
| <i>Scientific Books:—</i> | |
| <i>De Vries's Mutation Theory: PROFESSOR C. STUART GAGER. Field's Story of the Submarine: PROFESSOR C. H. PEABODY</i> | 740 |
| <i>Scientific Journals and Articles</i> | 744 |
| <i>Special Articles:—</i> | |
| <i>The Critical Spark Length: PROFESSOR FRANCIS E. NIPHER. The San Luis Valley, Colorado: C. E. SIEBENTHAL</i> | 744 |
| <i>The American Phytopathological Society: DR. C. L. SHEAR</i> | 746 |
| <i>Societies and Academies:—</i> | |
| <i>The Philosophical Society of Washington: R. L. FARIS. The Geological Society of Washington: EDSON S. BASTIN</i> | 757 |

MSS. intended for publication and books, etc., intended for review should be sent to the Editor of SCIENCE, Garrison-on-Hudson, N. Y.

THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

THE WORK OF THE HIGHER EDUCATION ASSOCIATION¹

THE Higher Education Association was formed in May, 1909, under a charter which will be referred to later. It was not formed to increase college endowment or teaching facilities, but rather to bring about, if possible, changes in the methods and results of the various departments of the college, to organize and conduct a campaign to obtain better educational results from the splendid equipment of men, material and money with which the American people have endowed the American colleges.

To understand the association's purposes it is necessary to know its point of view. In what I shall say at this time I shall speak almost exclusively of the college as an institution and not of the teaching force as individuals; of the official college and its lack of methods, or its false and archaic methods; of its catalogue or diploma values as distinguished from its educational values; of the cast-iron armor of formalism with which the institution as such benumbs or kills the life-giving educational efforts of the teaching force. However harshly I may speak of the institutional methods and ideals, I have the greatest possible sympathy with the men and women who are fettered by these methods, and who are often condemned to make bricks without straw.

To make myself clear I must point out as briefly as possible how and why the

¹ Read before Section L, Boston, December, 1909.

American colleges have changed their official emphasis from training for character and citizenship to training for class-room work and marks, and examinations to test class-room acquirements and for grade promotion.

Until about a century ago every college was conducted as a boarding-school home, with moral, religious and mental growth as a matter of far more serious concern than class-room work or diploma values, and without any catalogues.

A six months' probationary period for freshmen prevailed at Yale till 1848, but officially applied to *moral conduct* and not to *class-room marking*. The Yale laws provided that,

The senior Tutor shall keep a matriculation book, in which shall be registered the names of all students, who by their regular behavior, and attention to collegiate duties, for six months at least after their admission, shall exhibit evidence satisfactory to the Faculty of their unblemished moral character. And if any candidate shall fail of exhibiting such evidence, within a reasonable time, he shall be allowed to attend on the exercises of the College no longer. Each candidate shall be particularly required to exhibit proof that he is not guilty of using profane language. All those who are Students on probation, as well as the regular members who have been matriculated, shall be subject to the laws, penalties and discipline of the College. No candidate's name shall be registered, until he shall have subscribed the following engagement:

I, A. B., on condition of being admitted as a Student of Yale-College, promise, on my Faith and Honor, to observe all the Laws and Regulations of this College; particularly, that I will faithfully avoid using profane language, gaming, and all indecent, disorderly behavior, and disrespectful conduct to the Faculty of the same: as witness my hand,

A. B.

A study of Yale's printed laws from 1765 to 1906 enables us to trace certain fundamental changes in the college and its ideals. Seventy per cent. of the laws of 1774 related to the regulation of the stu-

dent's personal and college life as distinguished from class-room work or the functions of the college or its departments. Two chapters were entitled, respectively, "Of a pious and religious life" and "Of a regular moral behavior." The entire examination is treated in fourteen lines, as follows:

No Person may expect to be admitted into this College, unless, upon an Examination by the President and Tutors, he shall be found able extempore to read accurately, construe and parse Tully, Virgil, and the Greek Testament, and shall be able to write true Latin in Prose, and hath learnt the Rules of Prosody and vulgar Arithmetic; and shall bring suitable Testimony of a blameless Life and Conversation.

About the twentieth of July (on a Day appointed by the President) the Senior-Sophisters shall appear in the Chapel, to be examined by the President, Fellows, Tutors, or any other Gentlemen of liberal Education, touching their Knowledge and Proficiency in the learned Languages, the liberal Arts and Sciences, and other Qualifications requisite for receiving a Bachelor's Degree.

There was nothing about marks or the marking system. This relative unimportance of class-room work, examinations and the marking system gradually changed until in the printed laws of 1906 we find the proportion more than reversed, and only ten lines, or 95 words, devoted to conduct as such, while over 13 pages, or about 450 lines, relate to the marking system, class-room work and grade examinations. The laws of 1774 were not supplemented by any catalogue. The present-day laws are a mere supplement to an 800-page catalogue. I call attention to this entire change of *official* emphasis merely to direct your thoughts to the genesis and results of a right-about movement universal in the colleges which, if studied earnestly and impartially, may show us the source of some of our present troubles and the way out.

The life of the bread-winning citizen is

lived upon three distinct planes: the statutory or governmental plane, wherein the written law defines, commands or forbids certain rights, duties and acts; the contract or community plane, wherein contracts, more or less formal, govern his relations with his fellows in the community and in his profession or business; and lastly, the home plane, wherein the parent or other head teaches and enforces his precepts and his commands under quite a different law than that of the governmental or community planes.

Turning to the governmental plane, we find that the statute recognizes and punishes legal crimes and misdemeanors but not moral or social vices. It takes no cognizance of even the blackest lie unless it assumes the form of legal perjury or of criminal slander or libel. It does not reach private betting or gambling, or many other forms of social vices, any more than it does selfishness, sloth, inattention to business, breach of contracts, overreaching, Sabbath breaking and thousands of other things which we speak of as moral or social shortcomings. These belong to the community or home planes.

The statute can not make a man honest or moral or religious any more than it can make him fat or lean, or say what he shall eat or drink, or how he shall train his children or treat his wife. The statute, like all forms of governmental control, is artificial and inherently weak, and covers only the relation of the individual to the government or to those who have joined with him in giving up certain natural rights that they may have the protection of a common government. From its very nature, the statutory plane is the weakest and lowest in our lives, unknown in strictly patriarchal times and a necessity only as communities form and grow and intermingle. The statute has little to do with

moral character. If the veriest saint breaks the statute he is guilty of a crime or misdemeanor, and if the worst villain keeps within the written law, or is not proved guilty, he is accounted innocent. By careful observance of the written law a man does not become a model citizen. On the contrary, he may be dishonest, dishonorable or shiftless in his professional or business career, or be profligate in his home, or be selfish, cross-grained and unlovely in every way. In fact, it is the latter kind of men who are most likely to observe the letter of the statute.

When there was no adequate preparatory school system below the college, it was the last room of the boy's education. Now with a complete public school system below it, the college has become the first room of the young man's training for citizenship and should be so regarded. As befits the threshold of its students' citizenship, the college to-day has its clearly defined statutory or governmental, its community and its home planes; but it takes official cognizance only of the statutory plane in arriving at diploma values, and, officially and as an institution, neglects and apparently despises the community and home planes and the important educational effects for which they stand in the life of the future citizen. As we shall see, the American colleges long since and needlessly abandoned any close organic connection with the home and community planes of the college life and concentrated their official notice upon class-room work.

The college might have continued to use officially a clean and stimulating home life to aid in class-room work and in the development of citizens who should have high ideals of their duties in the college home and afterwards as husbands and parents in their own homes. But the institution allowed its pendulum to swing from an

over-emphasis of the college home to a substantial abdication of all home functions, and to an even greater over-emphasis of class-room work and grade examinations. First the state universities, which now contain more than one half of all students, decided to build no dormitories. Then new private colleges, like Cornell, were founded with no provisions for dormitories or any other institutional connection with the home plane. Finally, the older colleges, like Amherst, which had been strongest in their early religious and home life, gave up building new dormitories and even needlessly tore down some old ones. The reason for this is evident. The new college, the new spirit of learning, especially the new-born elective system, required constantly more money for new buildings and a larger faculty. Hence it was argued that the American college might well abandon all exercise of its home functions, and concentrate upon the curriculum. The unwisdom of thus abandoning instead of remodeling the home plane has long been apparent.

The words of the Psalmist have been changed in the college scriptures to read, "When my alma mater forsakes me, then the students and alumni will take me up." After the colleges had abandoned the home, but only thereafter, the students revamped the college secret society, and called it a fraternity, and with the aid of the alumni set it to building college homes. To-day these homes house more students than the college barracks, but together the homes and the barracks do not shelter one quarter of all the students. But the college as such has lost all organic control of the home plane and its formative and educational powers; and in determining diploma values, relies more and more upon the artificial and educationally ineffective college statute and ordinance and marking

system and examinations for promotion only, and officially not at all upon those moral qualities which are learned only in the home. If a well-fitted student fails or falls behind in his course, it is probably because of shortcomings upon the home plane, which the college meets by a little greater activity upon the statutory plane, by harsher marking and stricter examinations, rather than by a reformation upon the home plane where the real trouble exists.

Turning briefly to the college community life, we find the same kind of error upon the part of this nourishing mother. About forty years ago, and after the college had abandoned its home functions, there began a steady growth upon the college community plane, which until then had not existed. By the college community life I mean that part of the general student life, outside of the curriculum, which affects the student body as a whole; the twenty-seven or more well-defined college activities in which there are intercollegiate records, or in which, as in dramatics or the musical clubs or college journalism, there are presumed to be gathered the best talent which the college holds. The educational value of the college community plane is very great, and with many individuals even greater than that of the class-room. Emerson said in his essay on culture—please notice that it was in his essay on culture—"You send your child to the schoolmaster, but 'tis the school-boys who educate him"; and he continues a little later, "One of the benefits of a college education is to show the boy its little avail." A large part of the college education and training is gotten on the community plane. It teaches a man how to handle himself and his fellow-man and how to apply what he knows. This is the only plane where there are well-understood and universal intercollegiate records

and standards; and where anything but the best work is rebuked for alma mater's sake and in her name by a man's friends. It has no official marking system and no examinations, but gives judgment upon the spot by one's peers, who demand that each college champion shall put forth his utmost powers. Often this is the only plane in which an individual throughout four years has the very best teaching, and the very best coaching, and the very best practise which can be afforded, along a single line which is not mentioned in the college catalogue, but in which the college unofficially makes him a past master and expert.

Yet the college as such, from the first, could see no diploma values and hence no official values whatsoever upon the community plane, apparently because it was not class-room work. Directly and indirectly the colleges have gained millions of dollars and thousands of students because of the successful conduct by graduates and undergraduates of the various college activities, but officially, in their diplomas and their catalogues, the colleges do not admit the existence of these activities. A successful hero of the football field may attract to the college more new students than any three professors, but the time and strength thus spent for alma mater do not help him under the marking system or upon examinations. A strong editor of a college periodical or the leader in the cast of a Shakespearean play may do wonders morally or educationally for the college, but usually he gets no official or diploma credit—even in his English courses. The college organization meets any evils in the community plane, not upon that plane, not by a philosophical method, but by a greater emphasis upon the marking system and promotion examinations which belong to the statutory plane. Here again the college activities can say, "If my alma mater

forsakes me, then the students and alumni will take me up."

We see, therefore, that when a new order arose on the college community and home planes, the institution did not put itself at the head of this new educational movement, but officially ignored its existence and enacted new standards of marks and promotion examinations and courses to meet evils which lay upon another plane. College evils and vices are chiefly upon the home and community planes, and can be effectually solved only by remedies acting within these planes—by public sentiment within the student body and among the alumni raising the ideals of the community life, and by the leaders in and the owners of the home acting upon the individual members of each home.

The changes which can be wrought in college upon the individual undergraduate are either physical, mental or moral, which latter term includes religious. These changes may be wrought—largely outside of the statutory plane—by the influence and personal character or teaching of any one of scores of instructors; by the college community life in any one of the twenty-seven or more college activities; by the general tone and stimulus of the student life; or by the social, moral or religious uplift or downpull of scores of college homes, each differing as do ordinary homes and each varying widely from year to year. Thus each little college cosmos presents an almost infinite number of combinations working upon and through the three planes of each student's life, which may well account for the totally different results of the college course in educational but not necessarily diploma values upon the individual. Yet the college as an institution puts all its official values upon class-room work and promotion examinations and an

inadequate and misleading marking system, and *officially* stops there.

Furthermore, this over-emphasis of its statutory plane is as harmful to the instructor as to the student. The freshman or his parent takes up an 800-page catalogue and finds therein the names of hundreds of instructors and courses which all look alike to him; for any course under any instructor stands officially for one point towards a 60 per cent. diploma. Officially the college does not recognize, nor in any way provide the means for recognizing, unusual power or successful work by any instructor. The college is like a great library without a catalogue. There is no official guide to the personalities and powers of the various instructors, and no means of determining these or their educational values upon individuals. There is merely student tradition that Professor X is great, Professor Y dull as blazes and Professor Z an easy mark. Officially and in its catalogue and diploma, or in any other way in which the public can judge, the college is absolutely institutional and does not regard the personality of student or instructor.

There is in business what is known as the standardizing of efficiency, which means the ascertaining and fixing of a constantly improving high standard of efficiency and the bringing up of all parts of the business thereto. It is thus a progressive movement. But it is administrative in its nature. This administrative nature does not vary, although its applications may be as wide as various kinds of businesses and industries. The men who specialize in this work often style themselves industrial engineers.

It is at this point that the Higher Education Association believes that it can assist the colleges by bringing in the students and alumni. It believes that the colleges need

standardizing of efficiency and that this must come in large part through radical changes in the college administration. The present so-called administrative system is about as inadequate as it could well be, as shown by the pass to which, according to recent inaugurals, it has brought so-called college education. The general lines along which the Higher Education Association conceives that there should and can be standardizing of college efficiency, and in which it can help the individual student and instructor, and put more official value on personal worth and growth and less on marks and diploma values, is indicated by the following extracts from its charter:

The purposes for which said corporation is to be formed are as follows:

(a) To improve higher education throughout the United States, and in particular the internal and external conditions of the American college, by furnishing an agency and funds whereby a careful study can be made and improvements can be brought about in the institutions of higher learning, in the following ways, among others:

(1) In the financial department: a fuller and clearer treasurer's annual account; an improved and more complete system of bookkeeping; and through the development of an internal cost accounting system—in addition to the present method of merely accounting for the cash proceeds of trust and other funds—a more economical and intelligent administering of the resources, funds and activities of the colleges.

(2) In the department of instruction: the improvement of the pedagogical training of those proposing to teach in colleges; the conservation of the health and other interests of the instructional forces; the increase of their compensation; the provision of pensions; the safe-guarding and fostering of the interests of tutors, preceptors, assistants and other grades of junior or associate instructors; and the improvement of the administrative and other conditions affecting the teaching forces, collectively or individually.

(3) In the department of the student life: the betterment of the college community life and of the college home life, whether in the fraternity house, the college dormitory or the local boarding house; the restoration, so far as possible, of the individual training of the students, mentally,

morally and physically, during their college course and for their widest future usefulness as educated citizens.

(4) In the administrative department: the systematic study and wide adoption of better and more advanced college administrative methods, to secure the most efficient use of the college capital in character building and scholarliness; the devising and putting into force of new units of internal valuation of student and instructional work; the reduction of college waste and the college waste-heap in the student, instructional and other departments; the study of the college plant and field; the oversight and assistance of graduates; the bringing about, so far as is wise and desirable, of standardization and uniformity in college methods and standards; the making possible of the interchange of students and instructors; the relieving of the instructors from administrative details, and the putting of these under charge of administrative experts, whose duty it shall be to produce in every possible way conditions conducive to more efficient work of the instructional forces and to scholarliness.

(5) In the department of citizenship: the study of the civics and economics of the college itself, and of its various planes and departments, and of the relations of the student-citizens to the college state, the college community and the college home—all with reference to their future duties, as citizens, to their commonwealth, their community, business or profession, and their homes; the founding of chairs for the study of citizenship; the reorganization and fulfillment of the duties and responsibilities which the colleges themselves owe to the state as the capstones of a system of compulsory public-school instruction which has educated, at the public expense, most of the students who enter the colleges; and the restoration of the clear conceptions which the earlier institutions had of their direct and high obligations to the state as its public servants, to which had been intrusted public and private funds and powers.

(6) And generally to furnish means to determine and fix the true present position of the college in our educational system; to minimize the danger of injury to the colleges because of the push of the preparatory schools from below, and of the drain of the professional and graduate schools from above; and to inaugurate and foster an active forward movement in the development of the colleges and their curricula.

(b) To print and publish a magazine or maga-

zines, and other periodicals, newspapers, pamphlets or books, and to do a general publishing business.

(c) To organize and carry on a bureau or department for the employment of professors, teachers and others connected with college instruction or administration.

(d) To investigate, through experts or otherwise, the exact conditions prevailing in the colleges, and to formulate plans to improve such conditions; to organize, develop and maintain, within or without the state of New York, voluntary and unincorporated associations and assemblages of college alumni or others interested in the affairs of the colleges or their students, whose direct object shall be to advance the cause of higher education, and to improve the administrative, business and financial situation in the colleges, in order to insure that the revision of the place, polity and ideals of the American college and the reorganization of its administration shall be in the hands of its friends and well-wishers; to raise and disburse the funds and money necessary or desirable to effectuate any of the purposes or objects of the company or the advancement of education within the United States.

(e) To do all and everything necessary, suitable or proper for the accomplishment of any of the purposes, or the attainment of any one or more of the objects herein enumerated, or which shall at any time appear expedient for the benefit of the company, to the same extent as natural persons might or could do, and in any part of the world, as principals, agents, contractors, trustees or otherwise.

But any progress along such extensive and radical lines must fail if we are confined to the use of the present false and limited standards of measuring internal values within the college. An A, B, C, D marking system and examinations for grade promotion furnish no real units for valuing the educational effect upon the individual of the moral, religious, physical and intellectual influences of the college home plane; or of the twenty-seven activities and the general atmosphere of the college community plane; or even of the real or relative mental, moral or physical value to any particular future citizen and the commonwealth which he should serve, of scores of

courses which have a very distinct diploma value in the catalogue and upon the statutory plane of the college. We can never expect real standardizing of efficiency until some body of men skilled in such matters and experts in college affairs devise new units of internal valuation applicable in the most intricate affairs of the different planes of the college; or until these are all made to work together for good by an adequate administrative department. And as a corollary to this, it follows that if the present college administrative system, so called, has utterly failed in handling the comparatively simple problems of the statutory plane, much more will it be unable to handle satisfactorily the further complications which must arise when the college takes official cognizance of the home and community life.

To the educator and instructor this seems chimerical and impossible of accomplishment. On the other hand, to the business man it seems impossible that our institutions of higher learning should expect to get adequate educational results, mental, moral, religious and physical, out of their \$600,000,000 of capital, and \$75,000,000 of annual income, working through 30,000 instructors upon 300,000 individual students, when there is no concerted study looking toward a standardizing of efficiency, and no units by which to value their work except the A, B, C, D marking system and the examinations for promotion, which at best can apply only upon one plane of the college economy.

The Higher Education Association believes that in a fragmentary and disconnected way the material for the standardizing of the efficiency of the college already exists and that the men who can assume the charge of the new form of administration can be selected from college ranks. One of the first tasks of the association will

be to collect and collate the material already existing available for use in standardizing college efficiency, or for formulating and defining new units of internal educational and not merely statutory valuations. At the same time it would put tags upon the men who have already partly solved these problems that they may be available in applying the new methods.

The Higher Education Association believes that a large proportion of the problems which are troubling the colleges are not educational in their nature, but are strictly administrative questions which have arisen and have been solved under like conditions in other human activities. If so, these problems can be most quickly and smoothly solved through the cooperation of the alumni who have successfully solved and are daily coping with similar problems in their own business or professional life, and who are now trustees of colleges or eligible for such positions. My time will not allow me to give further particulars of how the Higher Education Association proposes to bring the alumni into line to help solve the extra-pedagogical problems of the college. It believes that these problems can be solved outside of the colleges themselves; that this work must be done through an organization of the best and best-known bankers, manufacturers, business and professional men, among our alumni, with its own corps of skilled educators and administrative and other experts; that a new form of standardizing of college efficiency which shall take account of the educational values of the personal equation of teachers and taught must be devised, and that a new kind of industrial engineers for college affairs must be trained and offered to the colleges.

CLARENCE F. BIRDSEYE

1 LIBERTY ST.,
NEW YORK CITY